

## TEMPERATURE IN RELATION TO QUALITY OF SWEET CORN.

NEIL E. STEVENS and C. H. HIGGINS, *Journal of Agricultural Research*, September 15, 1919, Volume XVII, No. 6.

This paper refers to the reputation of sweet corn grown near the northern limits of cultivation, for sweetness and quality, as compared with that canned in more southern districts, and states that this difference is not due to a difference in sugar content of the corn when it is picked, but because of the lower temperature at harvest time.

It shows that sweet corn deteriorates very rapidly after it is picked, and that the rate of deterioration depends upon the temperature. Tests developed the fact that at a temperature of 20° C. (68° F.) corn lost from one-fourth to one-third of its total sugar, during the first 24 hours after picking, or more than twice as much as that kept at a temperature of 10° C. (50° F.). Also that kept at a temperature of 30° C. (86° F.) more than 50 per cent of the sugar was lost during the same period. The respiration is very high during the first day after corn is pulled from the stalk, and the rate increases with higher temperatures. "With corn at a temperature of 25° C. (picked near noon on a warm day) there was over 19 per cent carbon dioxide at the end of 4 hours. With corn at a temperature of 15° C. (picked in the morning) 8 hours were required to reach practically the same point, while with still cooler corn the point was not passed in 10 hours." In this connection it is pointed out that corn which had been kept for some time in an atmosphere deficient in oxygen was of extremely poor quality.

The authors called attention to the fact that the corn-picking season in Maryland is in August, when the daily average temperature (at Baltimore) is about 75° F., while the picking season in Maine is in September, when the average daily temperature (at Portland) is about 60°. Thus the deterioration of corn during a given period after picking would be much greater, in an ordinary packing season under the higher temperatures that prevail in Maryland than with the considerably cooler weather that obtains in Maine at harvest time.—*J. Warren Smith.*

## CLIMATE AND WEATHER AND PLANT DISEASES.

The following extracted from the Plant Disease Bulletin Supplement No. 9, Bureau of Plant Industry, United States Department of Agriculture, shows the distribution of some plant diseases under the influence of climate, and the development as affected by different weather conditions:

"Apple Scab caused by *Venturia inaequalis* (Cke.) wint.—Favored by early and continued rains together with cool temperatures which prevailed over most of the eastern and central apple growing regions for about one month after the blooming period, apple scab, in 1919, appeared in many states with unprecedented severity and resulted in enormous losses.

"The main reason for this great outbreak of apple scab can be directly attributable to the unusual weather conditions in late April and during the month of May. The accumulation of scab during previous years was evidently a factor, but there was altogether too much rainy, cloudy, and damp weather during an entire month, beginning about the time the apple trees came into bloom. For example, the official Weather Bureau meteorological records at Washington, D. C., beginning April 24 and ending May 24, show only three periods with clear

weather—one clear day, April 24; two clear days, May 2 and 3; and two clear days May 18 and 19. During this period of 31 days, there were rains on 21 days, counting those in which a trace is recorded, and a trace is probably as effective on cloudy days as a heavier rain, not to mention the heavy dews with which the fruit and foliage were saturated on other cloudy days. Of the 21 days with rain, only 6 were marked 'partly cloudy,' which means that the sun shone through the clouds part of the time. The other 15 days were cloudy all day. Of the 10 days in which no rain fell, 5 only have already been accounted for as clear. Of the remaining 5 days, two were cloudy and 3 were partly cloudy.

"It is evident that there was almost a continuous infection period for 31 days, beginning when the apple trees were in bloom in the middle portion of this region, slightly preceding bloom in the northern sections, but following closely after bloom in the southern sections, and in general, occurring at the most dangerous period from the standpoint of apple scab. This is plainly the most important factor in the outbreak."

"Bitter rot caused by *Glomerella cinerula* (Stonem) S. & S.—Bitter rot is typically a disease of humid hot sections, extreme heat being especially favorable for its development. Those sections in which there are periods of extreme heat without appreciable temperature diminution at night with occasional showers or rainy periods are especially well situated for the development of bitter rot."—*J. W. Roberts.*

"Blotch caused by *Phyllosticta solitaria* E. & E.—Apple blotch, so far as known, occurs only in the Central and Southern States of the eastern half of the country. It has apparently not advanced beyond the northern borders of New Jersey, Pennsylvania, Ohio, Indiana, Illinois, and Iowa. One case was reported from a nursery in Wabasha County, Minn., in 1917, on imported nursery stock, but it is understood to have been eradicated. It is reported from a few localities in South Dakota, and is abundant in Nebraska, Kansas, Oklahoma, and Texas, but is not known to occur farther west."

"Rust caused by *Gymnosporangium juniperi-virginianae* Schw.—Apple rust is distributed over the Atlantic States from Maine to Georgia and extends westward as far as the outer boundaries of the nonirrigated apple belt. Extensive commercial production over this half of the country ceases at about the line of 18 inches annual precipitation, but rust is reported from scattered plantings practically up to the 100th meridian. It is not found in the irrigated districts, nor in the humid regions of the Pacific coast.

"In addition to the increase in the amount of infection, the unusual weather conditions of last spring, the excessive number of rainy and cloudy days occurring last spring, are undoubtedly an important factor in this outbreak."

"Black rot caused by *Physalospora cydoniae* Arnaud (*Sphaeropsis malorum* (Berk.) Pk.).—Black rot was reported by collaborators in 1919 from practically all apple growing regions in the eastern half of the United States, and also from Colorado and New Mexico. Greatest loss from this disease occurred in the States which lie east of the Mississippi and south of the Ohio and Potomac Rivers."

"Fire blight caused by *Bacillus amylovorus* (Burr.) Trevisan.—Fire blight occurred in 1919 in practically all States where the apple and pear are grown, but for the most part is perhaps the lightest infection of recent years. The group of States lying south of the Ohio and east of